EIAR
Ethiopian Institute of Agricultural Research

PABRA
Pan-Africa Bean Research Alliance
Better Beans for Africa

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Report on the status of ECABREN/PABRA supported activities in ETHIOPIA

By
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Major constraints to common bean production in Ethiopia

- Moisture stress (mainly drought)
- Decline in soil fertility
- Disease and insect pest problems
- Poor crop management practices
- Unavailability and lack of access to quality seed of improved varieties
- Market related problems

Achievements (2011)

- Pipeline varieties (to be verified for approval of release in 2012):
  - 3 Small white/Navy bean varieties
  - 3 small red bean varieties
  - 2 large white bean varieties
  - 2 Red mottled bean varieties

Achievements (2011)

- Released varieties
  - **Two large red mottled (ECAB-0056 and GLP2) bean varieties**
  - **2 climbing been varieties evaluated by NVRC at Bako**

Foundation seed multiplication and distribution

- **More than 28.0 tons of seed through commercial packs**
- **16.0 tons of seed distributed through small packs**
- **450 mt of seed produced by partners to be sold as quality seed**
- **More than 55,000 farmers reached directly**
- **More than 250 DAs and SMS trained**

Seed Cleaning

Weighing

Sealing

Small packet

Commercial pack


Packed seed ready for distribution

Promotional materials

- 200 posters (in two local languages)
- 150 seed production manuals (in three languages)
- 1000 leaflets (in two local languages)

❖ New leaflets and posters on bean value chain are being developed and ready for printing

Supporting nutrition and health, food security, environmental stresses and market challenges that will contribute to improve the livelihood and create income of resource poor small holder families in sub-Saharan Africa (PABRA project).

Immediate outcome 1.1 Increased access by especially women farmers to improved dry bean varieties resistant to multiple environmental stresses

Activity 1.1.1.1 Review and analyze current and future risks to bean production and utilization associated with major environmental stresses (drought, floods, heat, acid soils, salinity, low soil fertility, risk of soil degradation, pest and diseases)

Sub activity 1.1.1.1.1 Review and update bean production environments in Ethiopia

Sub activity 1.1.1.1.2 Collect secondary information (country reports) for PABRA Bean Atlas

Progress

- In 2010, and some data on secondary information of each bean growing was collected being with researchers from implementing centers .
- In 2011 cropping season, information on major bean production, and productivity, market, and production constraints in each growing season
- Draft map on bean production areas was also produced

Immediate outcome 1.1 Increased access by especially women farmers to improved dry bean varieties resistant to multiple environmental stresses

Activity 1.1.3.1 Identify, select and test widely new multiple stress resistant bean germplasm for release

Sub activity 1.1.3.1.2. Development and selection of new populations to multiple constraints (combining drought or heat resistance with resistance to biotic stress)

- Crosses were made at Melkassa in order to combine traits of seed quality (color, size, shape, seed and pod filling) with traits of tolerance/resistance to biotic and abiotic stresses

- 8 parent materials (Crest wood, Awash Melka, VAX-3, SAB-626, SAB-629, ACOS Red, RANJONOMBY, CANPSULA) were used during off season of 2011.

Immediate outcome 1.1 ….

Results

- From 8 single crosses made in the off season of 2011, plants setting 164 F_1 pods were harvested.
- Using the F1 seeds four double crosses were carried out in the main season of 2011.
- From four double crosses 71 plants setting 334 F_2 pods were harvested.
- Some F1 generations obtained from single crosses were advanced to F2 in the main season of 2011 to observe the segregating populations
- About 3000 F_4 segregating populations harvested from the previous crosses.

Immediate outcome 1.1 ….

Sub activity 1.1.3.1.3. Select for resistance to biotic and abiotic stresses including low N, P and pH complex from existing segregating populations

- ❖ **100 segregating materials from Melkasa were tested at Melkasa and Arsi Negele for CBB and ANT.**
- **We screened and tagged some materials which specifically observed good level of tolerance for CBB and HB in the field condition.**
- **15 segregating materials from Bako were also tested at Bako and Jimma for Diseases**
- **15 materials from Bako research center were tested at Bako and Jimma for diseases. According to the report obtained from the respective centers, five at Bako and three at Jima**

Immediate outcome 1.1 ….

Sub activity 1.1.3.1.5. Evaluate germplasm (including BILFA 6 and 7 and P efficient) for adaptation to low N, low P, saline and/or acidic soils

Preliminary variety evaluation nurseries for multiple stress tolerant (drought, insect pests and diseases)

- All 170 materials introduced from CIAT evaluated at Melkasa and Mieso
- HB and BSM were the major pests seriously affecting the materials at Miesso and Arsi Negelle sites
- Though CBB came in the later stages of the crop it was severe and helped to identify susceptible and tolerant lines.
- Amount rainfall and distribution was good in 2011 cropping season.

Immediate outcome 1.1 ….

No	Group/market class	No. of materials tested	No. of materials selected
Set I			
1	Large group	56	32
2	Medium group	42	20
3	Small group	72	40
	Total	**170**	**92**
Set II			
1	Large red	80	44
2	Red mottled	58	38
3	Speckled	77	43
	Total	**215**	**115**

Immediate outcome 1.1 ….

Preliminary variety evaluation nurseries for adaptation to acidic soils

- **The objective of this activity is to identify common bean genotypes resistant to low soil pH condition**
- **180 lines introduced from CIAT were evaluated at low soil PH problematic areas around Bako, Jimma, Pawe and Assossa**
- **81 promising materials promoted to PYT for multi location trial**

Immediate outcome 1.1 ….

Activity 1.1.3.1.7. Conduct national variety trial (N.TZ), for short growing season (belg) or residual moisture)

- **NPT containing twelve short duration varieties from different market classes was conducted at Arsi negelle, Shashamane, and Siraro during the *belg* season of 2011.**
- **In 2011 short growing season *(Belg)* there was no sufficient rainfall and the trial was not successful.**
- **Hence the materials will be evaluated during 2012 cropping season.**

Immediate outcome 1.1 ….

Activity 1.1.3.1.13. Evaluation of bean varieties for BSM tolerance

- In 2011 cropping season, 25 nationally released common bean varieties were evaluated at Alemata and Sirinka,
- Data on Mortality % due to BSM, mortality % due to other pests and larvae/10 plant
- In this study Gofta (14.5%) and Argane (13.8%) showed relative resistance to BSM
- High mortality percent due to BSM was observed in varieties called Batu (49%) and Chore (48.1%).
- Maximum number of larvae of BSM was recorded on Awash-1 and minimum number was recorded for Atandaba.

Immediate outcome 1.1 ….

- **the highest grain yield was obtained from Red wolaita (1085kg/ha) and Gofta (1062kg/ha)**

- **At Kobo, the result indicated that high mortality percentage due to BSM was on Awash-1 (57.8%) and Argene (49.7%) varieties whereas Red wolaita (29.3%) showed relatively low mortality percent for BSM than the other varieties.**

- **Significantly highest grain yield was obtained from Atendaba (1573.7kg/ha) and Gofta (1435.2) as compared to Nazareth-2 (257.3/kgha) and Batu (377.3kg/ha)**

Immediate outcome 1.1 ….

Activity 1.1.3.1.13. Evaluation of Introduced Resistant Common bean genotypes against Anthracnose and Angular leaf spot under hot spot areas in Ethiopia.

- **In 2011, twenty two common bean genotypes known for their resistant against anthracnose and angular leaf spot have been planted at two hot spot areas for angular leaf spot (Jimma) and anthracnose (Ambo).**

- **The data was received from the two locations and analysis in progress**

Immediate outcome 1.1 ….

Activity 1.1.4.1 Develop and assess gender responsive and efficient seed delivery systems

Sub activity 1.1.4.1.1.Increase/multiply/produce foundation seeds by both formal and informal seed producers/ partners

- **Production was done using rain fed (Meher) and Irrigation (off season)**
- **Testing for seed quality parameters (Germination/ Viabilty, physical purity…)**
- **Printed information on both types of packs (variety name, information on quality parameters, year of production…)**
- **Distribution (some partners received the seed from MARC and for some provided at their site)**
- **With suggested price list for small packs**

Immediate outcome 1.1 ….

- **Two approaches used by MARC**
  - **Commercial Packs (*popular varieties*)**
    - **Packed in three commercial pack sizes of 5, 12.5 and 25 kg and dispatched through primary partners**
  - **Small Packets (mostly *new varieties*)**
    - **To promote and avail seed of improved new varieties for small scale farmers.**
    - **The approach considers the purchasing power of poor farmers with too fragmented and small land holding size**
    - **Three size categories (250, 500 and 1000 g)**

Immediate outcome 1.1 ….

- Six and nine varieties were distributed through commercial and small packs, respectively
- More than 33 partners were participated to distribute both pack types
- 15 of them were new partners to reach new areas
- Over 28.0 and 15.5 tones of foundation seed distributed through commercial and small packs respectively

Amount of foundation seed distributed using commercial pack

Variety	No of pack	Amt (kg)	Pack size (gm)	Amt (Kg)	Pack size (gm)	Amt (kg)	Total no of pack	Total amt (kg)
	5 kg		12.5 kg		25 kg			
Awash-1	570	3450	228	2850	234	5850	1032	12150
A/Melka	67	370	345	4312.5	56	1400	468	6082.5
Nasir	189	945	175	2187.5	120	3000	484	6132.5
Dinknesh	76	380	110	1375	10	250	196	2005
Deme	112	560	100	800	12	300	224	1660
Batu	8	40					8	40
Total	**1022**	**5745**	**958**	**11525**	**432**	**10800**	**2412**	**28070**

Amount of foundation seed distributed using small pack

Variety	No of pack	Amt (kg)	Pack size (gm)	Amt (Kg)	Pack size (gm)	Amt (kg)	Total no of pack	Total amt (kg)
	250 gm		500 gm		1000 gm			
Awash-1	2197	549.25	955	482.5	1400	1400	4552	2431.75
A/Melka	1950	487.5	2149	1074.5	1376	1196	5475	2758
Nasir	1873	468.25	1536	768	705	705	4114	1941.25
Dinknesh	2340	585	2523	1236.5	810	810	5673	2631.5
Deme	1851	462.75	1386	693	646	646	3883	1801.75
Dimtu	550	137.5	650	300	100	100	1300	537.5
DRK	1556	389	385	192.5	102	102	2043	683.5
Argane	0	0	500	250	100	100	600	350
Batu	2800	700	1450	725	620	620	4870	2045
Total	15117	3779.3	11534	5722	5859	5679	32510	15180.25

Immediate outcome 1.1 ….

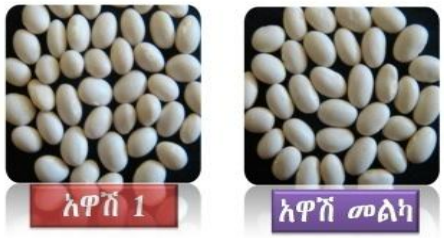
Activity 1.1.4.1.7. Design and mass production of information materials for the new bean lines

Status

- **200 posters (two local languages)**
- **150 seed production manuals (three languages)**
- **1000 leaflets (two local languages)**

New leaflets and posters are being developed and ready for printing

በገበያ ተፈላጊ የሆኑ የተሻሻሉ የቦሎቄ ዝርያዎችን በማምረት ገቢዎትን ያሳድጉ



- ድርቅ የመቋቋም ችሎታቸዉ ከፍተኛ የሆነ
- በተለያዩ ሰሉቄ አብቃይ አካባቢዎች ተስማሚነታቸዉ የተረጋገጠ
- ምርታማነታቸዉና የመታሸግ ባህሪያቸዉ ከፍተኛ

አድራሻ መረጃ
ኢትዮጵያ ግብርና ምርምር ኢንስቲትዩት
መልካ ጎልና ምርምር ማዕከል
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CIAT
Centro Internacional de Agricultura Tropical
International Center for Tropical Agriculture

Designed by: Setegn Gebeyehu

የቦሎቄ ዘርን በጥራት የማምረት ዘዴ

ለአነስተኛ ደረጃ የቦሎቄ ዘር አምራቾች የተዘጋጀ መመሪያ

አንደኛ መመሪያ

Nyaataa adda addaa qopheesudhaaf kan tolan akkasumas gabaa irratti fudhatama kan argatan sanyii filatamaa BOLOQQEE oomishuun itti fayyadamaa

- Kan qophisaan (yeroo gabaaba keessatti kan gahan)
- Naannoowwan boloqqee oomishan gara gara tiif toluun isaanii kan mirkanaa'e
- Qabiyeen albuuda sanyii isaanii (fkn Pirootiina) ol aanaa waan ta'eef guddinaa qamaa fi fayya uummataaf gahe gudda kan qaban

Odeeffannoo dabalata yoo barbaaddan
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የተሻሻሉ የቦሎቄ አመራረትና ድህረ ምርት አያያዝ አሠራሮች

ቴክኖሎጂዎቹን መጠቀም የሚያስገኙት ፋይዳዎች

- የሰብሉ ምርትና ምር ማነት ይጨምራል፡፡
- ጥራቱ የተጠበቀ ምርት ለገበያ ከቀረበ የአርሶ አደሩ ገቢ ይጎለብ ል፤ ለሀገሪቷም ከፍተኛ የዉጭ ምንዛሪ ያስገኛል፡፡
- ሰብሉ ለምግብ ዋስትና መረጋገጥ አስተዋጽዖ ያደርጋል፡፡

የተሻሻሉ ቦሎቄ ዝርያዎች ባህሪያት

- ምር ማነት በሄክ ር ከ 20 - 25 ኩን ል
- ድርቅና በሽ ን የመቋቋም ችሎ ቸዉ ከፍተኛ ነዉ፡፡
- የፕሮቲን ይዘ ቸዉ ከፍተኛ በመሆኑ ለተመጣጠነ ምግብ የጎላ ድርሻ አላቸዉ፡፡
- የመ ሸግ ችሎ ቸዉ ከፍተኛ በመሆኑ በዉጭ ገበያ ተፈላጊነታቸዉ የላቀ ነዉ፡፡

ባህላዊ ማረሻ

ዘመናዊ ፅሏላጭ ማረሻ

- በዘመናዊ ፅሏላጭ ማረሻ ማረስ የአርሻ ደግግሞሽን በማስቀረት ጎበዝ፣ ጊዜና ጉልበትን ይቆጥባል፣ በሚፈለገዉ ጥልቀት ጎብቶ አረምን ኪሥሩ በመንቅልና በመፈልፀጥ የሰብሉ ምርታማነት እስከ 40 ፍ እንዲጨምር ይረዳል፡፡

- ቦሎቄን በመነከር መዘራት ከፍተኛ ጥቅም አለዉ፡፡ በቦይ መከከል 40 ሣ.ሜ. ከተክል ተክል ያለዉ ርቀት ደግሞ 10 ሣ.ሜ. ጎዳሆን ይመከራል፡፡

- ከዘር በፊት የቦሎቄን ማሣ ከ 2 - 3 ጊዜ አርሶ ማለስለስ አረምን ከመቆጣጠር ባሻገር የሰብሉ ብቅለትና ዕድገት እንዲፋጠን ይረዳል፡፡
- የአፈሩ ርጥበትና የአየሩ ሁኔ ለዘር ብቅለትና ለሰብቃያዉ ዕድገት አመቺ በሆነበት ወቅት ሰብሉ መዘራት አለበት፡፡

- የሰብሉን ምር ማነት ከመጨመር አንጻር 100 ኪ.ግ. ዳፕ ማዳበሪያ በዘር ጊዜ መጨመር ያስፈልጋል፡፡

- ቦሎቄን በየዓመቱ መላልሶ በአንድ ማሣ ላይ ማምረት ሰብሉን የሚያጠቁ በሽታዎችና ተባዮች በአከባቢዉ እንዲባዙ እድል ስለሚፈጥር አንደ በቆሎና ጤፍ ከመሣሰሉት ጋር በፈረቃ መመረት ይኖርበታል፡፡
- ቦሎቄን ዋና ዋና የምባብ ሰብሎች ከሆኑት አንደ በቆሎና ማሽላ ጋር በአንድ ማሣ ላይ በተለያዩ የስብጥር ዓይነቶች ማምረት ከማያስገኘዉ ኢኮኖሚያዊ ጠቀሜታ ባሻገር የአመራር ዘዴዉ የመሬት ለምነትን ለመጠበቅ ይረዳል፡፡

የልታረመ ቦቆቄ ማሣ

- አረም ከቦሎቄ ማሣ በወቅቱ ካልተወገደ በሰብሉ ምርትና ጥራት ላይ ከፍተኛ ጉዳት ሊያደርስ ይችላል፡፡
- ሰብሉ ተዘርቶ ከ 2 እስከ 3 ሣምንት ጊዜ ጀምሮ እስከ 5ኛ ሣምንት ድረስ አንደ እስፈላጊነቱ ከ 1 - 2 ጊዜ ማረምና መኮትኮት በአረም ምክንያት ሊደርስ የሚችለዉን ጉዳት በእጅጉ ይቀንሳል፡፡ ቦሎቄን ማረም ሰብሉ ማበብ ከመጀመሩ በፊት መጠናቀቅ አለበት፡፡
- በእጅ ማረም በማይቻልበት ሁኔታ ፔንዲሜንታሊንና ፍሉሮዲፈን የተባሉ ፀረ አረም ኬሚካሎችን በመርጨት አረምን መቆጣጠር ይቻላል፡፡

የቆረመ ቦቆቄ ማሣ

የተሰበሰበው ሰብል ማሣዉ ላይ ሲደርቅ

- የቦሎቄ ዘለላዎች (Pods) በሙሉ ወደ ቢጫነት ሲቀየሩ ሰብሉ ወዲያዉኑ መሰብሰብና ወደ አዉድማ መጓጓዝ ይኖርበታል፡፡ አዘያም ለዉቂያ ዝግጁ እስኪሆን ድረስ በሚገባ መድረቅ አለበት፡፡
- ምርቱ ከሌሎች ባዕድ ነገሮች እንደዚሁም ከሌሎች ዝሪያዎች ዘር ጋር ተቀላቅሎ ጥራቱ እንዳይቀንስ ተሰብስቦ የደረቀዉ ሰብል በሸራ ወይንም ሌሎች ተመሳሳይ ማቴሪያሎች ላይ መወቃት ይኖርበታል፡፡
- አሀሉ (ዘሩ) ወደ ማከማቻ ቦታ ከመወሰዱ በፊት በሚገባ መድረቁን ማረጋገጥ ያስፈልጋል፡፡

አጨድማ አከባቢ ትክምር ሲደርቅ

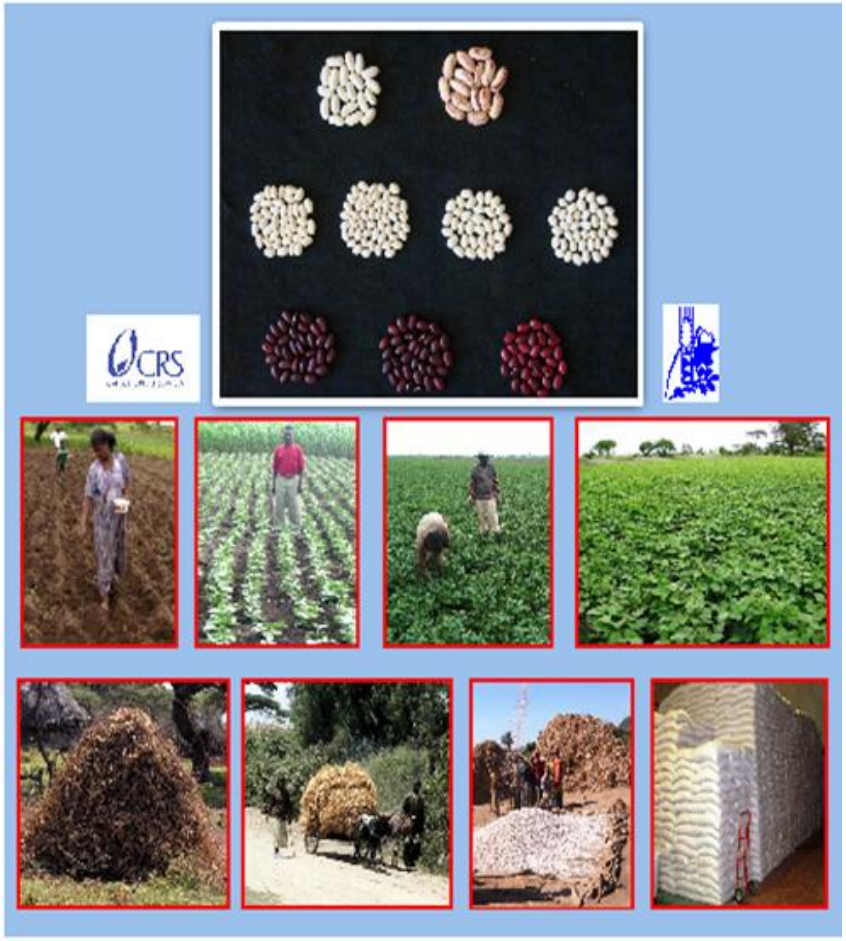
በከማቾት ቦታ/ወቅት መከናወን የሚገባቸዉ ተግባራት

- ቀደም ብሎ የቦሎቄ ምርት ሲከማችባቸው የነበሩ ቦታዎችና ለዘሪ አገልግሎት ሲዉሉ የነበሩ ቁሳቁሶች በሚገባ መፅዳት አለባቸዉ፡፡
- አዲሱ ምርት ከከረመዉ ጋር ፈጽሞ ተቀላቅሎ መከማቾት የለበትም
- የተባዮችን ጉዳት ለመከላከል ምርቱን በባህላዊ መንገድ (ለምሳሌ ከአመድ ጋር በመደባለቅ) ወይንም የተለያዩ ኬሚካላዊ መከላከያ ዘዴዎችን (በመሌወስ፣ በመርጨት ወይንም በማጠን) መጠቀም ያስፈልጋል፡፡ ስለኬሚካሎቹ ባይነትና አጠቃቀም በአቅራቢያዎ የሚገኙትን የግብርና ባለሙያዎችን ያማክሩ፡፡

CRS CATHOLIC RELIEF SERVICES

Prepared by Setegn Gebeyehu 2009

Good Practice Guide for Bean Production and Handling in Ethiopia



Setegn Gebeyehu
Legesse Dadi
September, 2009

Immediate outcome 1.1 ….

- 1.1.4.1.8. Carry out demonstrations, seed fairs, Agriculture shows and open days for pre-release/released varieties targeting different clients

- Nationally released varieties were displayed at three (Adama, Awasa and A.A) exhibitions and information on the preference of traders, processors, exporters and farmers

- 2011 (two exhibitions)-Dire dawa, Addis Chamber ITF
  - 21 & 24 samples , 20 manuals ,106 leaflets, 313 posters
  - Visitors > 11,000

Partners' consultation workshop/Platform

Addis Chamber Spec int TF

Exhibitions at Dire-Dawa: 2011

Oromia Model Farmers' visit, MARC, 2011

Ada'a Agricultural exhibition,

Immediate outcome 1.1 ….

Activity 1.1.4.1.9. Hold national platform workshops to review seed systems research interventions/approaches

Status

- **Two planning meetings involving different partners (existing and new) were held at Melkasa (with CRV partners)**

- **Chiro (with east and west Hararghe partners). In order to evaluate the decentralized seed system activities, mid-term review meeting involving all partners was held at Melkasa.**

- **Three review meeting involving all partners were held at MARC, to review the status of the activity**

Immediate outcome 1.2. Increased access to cost effective and environmentally friendly integrated stress management options (e.g. for soil fertility and water, pest and diseases) by particularly women farmers

Activity 1.2.1.1 Develop/Identify new/existing options and strategies for managing different stress environments

Sub Activity 1.2.1.1.1.1. Develop integrated management of common bacterial blight, anthracnose and bruchid

I. Integrated management of major bean fungal foliar diseases

- Three bean varieties: Awash-1, Awash Melka and Nasser
- Supplementary fungicide (Orious at 2000ml/ha) sprays at three critical bean growth stages: (V4 (third trifoliate), R5 (Pre-flowering) and R7 (pod setting)
- The locations were Jimma, Pawe, Areka and Ambo and they are hot spot for the diseases.
- **Result**
- Data from all locations received and analysis is in progress

Immediate outcome 1.2. Increased …

II. Validation of Integrated common bacterial blight (CBB) management under western Bean growing areas of Ethiopia

- **Integrated CBB management options were validated at Bako and Pawe.**
- **This experiment has been planted three bean varieties (Awash-1, Awash melka and Nasser) and supplementary sprays of bactericide at critical bean growth stages**
- **The treatments were arranged using RCBD design with three replications.**

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Immediate outcome 1.2. Increased access to cost effective and environmentally friendly integrated stress management options (e.g. for soil fertility and water, pest and diseases) by particularly women farmers

Activity 1.2.1.1.Review the status and characterize old/new pests and diseases including angular leaf spot, anthracnose, root rot , web blight, rust, halo blight, bean stem maggot, bruchids, aphids and white flies in Ethiopia.

- **Status of insect pest**
- Survey was carried out in CRV areas of East Shewa Zone (Boset, Dugda and Adame Tulu districts), West Arsi zone (Shalla district) and Kefa Zone (Bonga District) in 2011.
- From each district except Boset and Dugda 3 PAs from each Wereda 10 farmers/PA; totally 110 farmers field were assessed.
- BSM was the dominant insect pest observed in most of the surveyed areas except in Bonga District.
- Foliage beetle also found in most of the farms however, ABW was observed in some farmers' field.

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Activity 1.2.1.1.Review ...

- **Status of insect pest**
- High BSM incidence was observed at Shalla (47.05%) and Dugda (44.14%) and the severity was high.
- At Boset and Adame Tulu the BSM incidence also high but the severity was very low in the former Woreda.
- ABW observed at Bofa and Adami Tulu with percent incidence of 7.63 and 0.76 respectively,
- From the three PAs assessed at Shalla, Welilalti (52.14%) and Awara Gama (46.86%) recorded high BSM incidence but the severity was

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Result

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Immediate outcome 1.2. Increased access to cost effective and environmentally friendly integrated stress management options (e.g. for soil fertility and water, pest and diseases) by particularly

Activity 1.2.1.1.Review …….

- ABW observed at Welilalti (10.43%) with very low severity.
- BSM frequently found in all bean farms at Adami tulu, but the incidence percentage varies from PA to PA.
- At Oda anshura PA, BSM percent incidence was high (46.01%), but high severity of BSM infestation was observed at Anneno shesho and Hurufa lole.
- Low ABW incidence percentage was observed at Ouda anshura and Hurfa lole PAs, with 1.1 % and 1.14% respectively and the severity also very low.
- At Gimbo there were no BSM and ABW infestation in all PAs during the survey. Foliage beettle was observed in all PAs at Gimbo but high incidence percentage was observed at Hibret (41.48%).

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Activity 1.2.1.1.Review …

- **Status of diseases**
- In CRV, CBB is the major disease followed by Anthracnose and HB
- Rust was among the diseases scored in CRV but with minimum level of incidence.
- The scored scale of all the three diseases were in the range of 1 to 4. The scored of CBB and Anthracnose indicated that, both diseases were sever at Dugda than any woredas of CRV.
- In Gimbo woreda of Kafa zone the score of Angular leaf spot was higher followed by CBB, but both diseases were under the level of minimum effect on bean yield

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Activity 1.2.3.1.1 Develop new environmentally friendly IPDM and ISFM packages related to intensification of bean cropping systems

I. Validation of integrated bean steam maggot (BSM) management options on farmers' field

- **IPM of BSM was studied using resistance varieties, seed treatment and high population density at Alamata and Sirinka/Kobo.**
- **Variety Awash-1 was used for the seed treatment, population density and control**
- **This year there was a high BSM infestation in CRV, Alamata and Sirinka/Kobo**

Immediate outcome 1.2. Increased …

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Activity 1.2.3.1.1 Develop new environmentally friendly IPDM and ISFM packages related to intensification of bean cropping systems

I. **Validation of integrated bean steam maggot (BSM) management options on farmers' field**

- **The highest mortality percentage was record on Melkae (30.5%) while the lowest was observed on Beshbesh (3.6%).**

- **The two resistant varieties showed different reaction against BSM**

- **High yield was recorded from population density (1144.9 kg/ha) and Awash-1 treated with Gaucho (952.9 kg/ha**

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Result

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Immediate outcome 1.2. Increased access to cost effective and environmentally friendly integrated stress management options (e.g. for soil fertility and water, pest and diseases) by particularly women farmers

Activity 1.2.3.1 Develop and assess efficient and gender responsive delivery systems for disseminating environmental options

Sub activity 1.2.3.1.4 On-farm evaluation of common bean varieties for their compatibility to bean-maize intercrop systems

- **Locations: Bofa , Shala and Bulbula**
- **8 bean varieties were evaluated at each farmers' field in each location**
- **Maize variety, Melkassa-2 was used as cereal component of the trial. The population of the maize was kept 100% and that of beans was 50% in all location.**
- **Maize was planted at appropriate planting time for each area and beans were intercropped at the knee height stage of maize plant.**
- **RCBD was used as design with three replication on each farmer's field..**

Immediate outcome 1.2. Increased …

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Result

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Activity 1.2.3.1 Develop and assess …

Sub activity 1.2.3.1.4 On-farm evaluation ..

- **All Important agronomic parameters for both crops were collected at appropriate time.**
- **Data of grain yield and yield components revealed that more than 5% yield increment have been obtained when Melkasa 2 intercropped with Deme, Dinknesh and GLP-2**
- **Similarly higher number of cobs was obtained when Melkassa 2 intercropped with, ECAB-0056, GLP-2 and Dinknesh**
- **Awash-1, GLP-2 and Awash Melka gave high yield when intercropped with Melkassa 2.**
- **The mean data for yield components from all the locations indicated that, Nasir (5.1), Awash-1 (4.7) and Dinkinesh (4.4) have scored higher pod per plant under intercropping condition.**
- **bLER = 1.05 to mLER = 1.29 indicated that intercropping Melkasa 2 with majority of the CB varieties evaluated**

Immediate outcome 1.2. Increased …

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- **Data from all locations received and analysis is in progress**

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- **This experiment has been planted three bean varieties (Awash-1, Awash melka and Nasser) and supplementary sprays of bactericide at critical bean growth stages**
- **The treatments were arranged using RCBD design with three replications.**

Result

- **Data from all locations received and analysis is in progress**

Immediate outcome 1.2. Increased access to cost effective ….

Activity 1.2.3.1 Develop and assess …

Sub activity 1.2.3.1.5 Determine the optimum rate of commercial fertilizers for different cropping systems, agro-ecology and soil type

- The objective was to determine the optimum N and P rates for common bean production

- The treatments were comprised of different rates of N and P using DAP and Urea

- The trial was conducted during the main season of 2011 at Melkassa and Shala using Awash Melka

- The design was RCBD in three replications. Plot size used was 9.6m^2: 0.4m (spacing b/n rows) X 4m (row length) X 6 (no of rows)

Immediate outcome 1.2. Increased access to cost effective ….

Activity 1.2.3.1 Develop and assess …

Sub activity 1.2.3.1.5 Determine the optimum…..

NO	Treatment Name	Yield and yield components		
		Pod/ plant	seed/ pod	Grain yield (kg/ha)
1	AM+0D+0U	4.0	4.0	2171.3
2	AM+0D+50U	4.3	4.3	2301.8
3	AM+50D+50U	5.0	5.6	2657.8
4	AM+100D+50U	5.0	6.3	2693.8
5	AM+50D+100U	5.2	5.3	2291.5
6	AM+100D+100U	5.0	5.3	2564.8
7	AM+100D+0U	4.5	5.0	2577.3
8	AM+150D+0U	4.3	4.5	2395.5
	CV	34.7	11.8	19.3
	Sign (tre)	Ns	Ns	*

Immediate outcome 1.2. Increased access to cost effective ….

Sub activity 1.2.3.1.6 Determine the optimum spatial arrangements and population densities for different seed sizes and growth habits of common bean

- **The objective was to determine optimum plant population (seed rate) and spatial arrangement for different seed sizes**
- **It was conducted at Melkassa research**
- **The treatments were comprised two different seed size of bean varieties (AwashMelka Small seed< 25g/100 seed, Deme large seed >40g/100 seed) and three level intra-row and inter-row spacing (5, 10 and15 cm and 20, 30 and 40 cm between plants and rows respectively)**
- **The design was factorial RCBD in three replication.**

Immediate outcome 1.2. Increased access to cost effective ….

Sub activity 1.2.3.1.6 Determine the optimum spatial arrangements and population densities for different seed sizes and growth habits of common bean

No	Treatments	Yield and yield components		
		Pod/ plant	seed/ pod	Grain yield (kg/ha)
1	Awashmelka(v_1)	21.48	6.56	3333.90
2	Dinknesh (v_2)	23.07	6.30	2199.40
	LSD	1.88	0.39	244.69

No	Treatments	Yield and yield components		
		Pod/ plant	seed/ pod	Grain yield (kg/ha)
1	20cm	20.72	6.33	2781.50
2	30cm	23.61	6.28	2818.20
3	40cm	22.50	6.67	2700.20
	LSD	2.310	0.48	299.68

No	Treatments	Yield and yield components		
		Pod/ plant	seed/ pod	Grain yield (kg/ha)
1	5cm	21.28	6.39	2693.30
2	10cm	23.11	6.39	2722.10
3	15cm	22.44	6.50	2884.40
	LSD	2.31	0.48	299.68

Nutrition activities

1.3.1.1.1 Increase micronutrient rich bean seeds through multiplication of breeder seeds

- 16 quintals of seed Gofta variety was produced
- Of which 12 quintals were dispatched to Wolaita zone through Areka agricultural research center.
- two target woredas (humbo and kindo koisha). The seed was intended for further distribution to 240 farmers (5 kg each) in four kebeles.
- Moreover about 200 kgs of seed Gofta variety was multiplied by farmers at west Hararge zone for further distribution. Those multiplied seeds were delivered and distributed
- However after distribution to woredas, especially at Wolaita zone, due to delay of further distribution to farmers and long period of rainy season farmers did not get any harvest.

Nutrition activities

1.3.1.1.2 Training of farmers on bean seed production (production, agronomy

- Bean production management training was given to development agents working at wolaita zone target areas in relation to TLII seed system project.

- Therefore there was no need to further provide training on beans production.
- However training was provided for the development agents working at west hararge zone target areas.
- A total of 20 agricultural experts, development and health agents are trained.

Nutrition activities

- **1.3.2.1.1 Conduct baseline survey on nutrition and dietary assessment**

- **The baseline survey was not conducted due to seed/grain production failure at Wolaita zone in two woredas and four kebeles.**

- **Regarding West hararge zone, baseline survey was conducted last year.**

- **Data entered in to computer. Need to decode and analyze**

Nutrition activities

- **1.3.2.1.2 Map areas of intervention.**

- **According to the collected data, secondary data on nutritional status and dietary diversity of children and women is available only at regional level**

- **It is not downscaled to woreda and kebele level.**

- **Therefore it is difficult to show the real malnutrition status of the region at the same time to map the areas of intervention comparing to the other kebels and areas in Ethiopia.**

- **However the secondary data for malnutrition and dietary diversity of children and women of Ethiopia is compiled and submitted to PABRA nutrition**

Nutrition activities

1.3.2.2.1 Identifying/strengthening key stakeholders to promote the micronutrient rich bean varieties

- Stakeholders are indentified.
- Care at chiro, agricultural and health offices and departments at the respective zones and woredas

1.3.2.2.4 Identify target areas for intervention

- ❖ Two woredas were identified as part of intervention at wolaita zone.

Nutrition activities

- **1.3.2.2.5 Conduct ToT on micronutrient rich beans processing and uses.**
- **For a total of 40 participants were given training on beans food preparation and utilization at chiro town.**
- **Participants were from two woredas and four kebeles.**
- **During the training about 10 beans based dishes were demonstrated and tested by the trainees and other agricultural experts.**

Nutrition activities

1.3.3.1.1 Evaluate nutrient retention in micronutrient rich bean based processed foods.

- **Still ongoing. The existing problem on evaluation of the nutrient is availability of reliable analyst.**
- **We were hoping that existing AAS would be maintained.**

1.3.3.2.1 Establish baseline content of iron and zinc in raw and processed beans.

1.3.4.1.1 Popularization of the micronutrient rich bean varieties among the communities.

- **The two activities are on going**

Immediate outcome 2.2. Increased access to new and existing markets and opportunities for both men and women

2.2.2.1 Develop and promote gender responsive strategies for linking smallholders to markets, including market institutional innovation

Sub activity 2.2.2.1.2. Document and evaluate major bean markets- their characteristics, constraints and opportunities

Result

Source of primary Data

- **ECX**
- **ACOS**
- Ethiopian Catholic Church social and development coordinating office
- CSA
- Lume Adama Cooperative union

Immediate outcome 2.2. Increased access to new and existing markets and opportunities for both men and women

Type of market information

- Price
- Demand
- Market opportunity

Source of information

- Mass media
- Local market
- Traders
- Exporter
- Other farmers
- Other union
- Beauro of agriculture
- Own survey

Immediate outcome 2.2. Increased access to new and existing markets and opportunities for both men and women

Means of information sharing and gathering

- Mobile phone
- Hardcopy
- soft copy
- web
- Email
- Website
- Radio
- publication

Immediate outcome 2.2. Increased access to new and existing markets and opportunities for both men and women

- 2.2.2.1.1. Review, and evaluate national bean market information in Ethiopia
  - Questionnaire Developed
  - Primary and secondary data collection underway
- **Based on the secondary data collected constraint of major beans market are:**
  - Illegal trade
  - Shortage of improved varieties in enough amount
  - Luck of standard
  - Luck of information about current national and international market
  - Market chain problem
  - Less linkage among stakeholders
  - Shortage of storage
  - Cooperatives and unions have Shortage of capacity

Immediate outcome 3.2. **Increased access particularly for information and influence knowledge that shapes bean technology development, delivery policy**

3.2.5.1. Support development and promotion of tools to influence formulation of policy that positively impact on the bean sector

3.2.5.1.1 Map out bean related policies where the national bean program have special advantages

Immediate outcome 3.2. Increased access….

Two policy issues

1. **Criteria of small white (navy) should be improved**
   - ❖ Currently, seed size and shape criteria (WPB round and WPB flat)
   - ❖ This encourages the mixing of d/t varieties
2. **Official (legal marketing of small reds)**
   - ➢ Varieties are available
   - ➢ Quality products are available
   - ➢ Markets are available
   - ➢ But red beans are mostly marketed illegally (contraband
   - ➢ Option of to be traded through ECX

Immediate outcome 3.2. Increased access….

Consultative meeting was held with stakeholders

- Research Institutes (Melkasa, Debrezeit, Areka, Hawasa)
- Oromiya Market agency
- SNNP agricultural input and marketing office
- ADO (East Showa, West Hararghe, West Arsi…)
- NGOs (CRS: Meki and Wonji catholic secretariat)
- Exporters (Acos-Ethiopia)
- FCU(Lume Adama, Meki Batu, Uta Wayu)
- Private farms (Aser)
- Farmers group
- Individual farmers

Immediate outcome 3.2. Increased access….

- Discussion mad on the issues and agreed on the important of the issues

- Technical taskforces consisting of members from concerned stakeholder formed
- To do the following tasks
  - To Identify different world market criteria for white pea beans
  - Identify and discuss the suggested amendment on standardization criteria
  - Quick survey study on the amount of products available on the market and other socio economics related to the criteria
  - Awareness creation on marketing chain
  - Write report and present to the higher level for lobby